CLAIMS

1. A surface acoustic wave filter where a plurality of surface acoustic wave resonators including a comb electrode and a grating reflector are coupled on a piezoelectric substrate,

wherein a dielectric film is formed on a surface of at least one of the surface acoustic wave resonators, and the dielectric film is not formed on a surface of at least another one of the surface acoustic wave resonators.

2. The surface acoustic wave filter of claim 1,

wherein capacitance ratio of the surface acoustic wave resonator having the dielectric film is set higher than that of the surface acoustic wave resonator having no dielectric film.

3. The surface acoustic wave filter of claim 1 or claim 2,

wherein resonance frequency of the surface acoustic wave resonator having the dielectric film is set higher than that of the surface acoustic wave resonator having no dielectric film.

4. The surface acoustic wave filter of claim 1 or claim 2,

wherein resonance frequency of the surface acoustic wave resonator having the dielectric film is set lower than that of the surface acoustic wave resonator having no dielectric film.

5. The surface acoustic wave filter of claim 1, wherein

the surface acoustic wave resonators are coupled in series and in parallel to form a ladder type filter structure, and

the dielectric film is formed on at least one of the surface acoustic wave resonators coupled in series or on at least one of the surface acoustic wave resonators coupled in parallel.

6. The surface acoustic wave filter of claim 1, wherein

the dielectric film is a silicon dioxide film.

7. A SAW duplexer employing the surface acoustic wave filter of claim 1.

8. A SAW duplexer employing the ladder type surface acoustic wave filter of claim 5.

9. A SAW duplexer comprising:

a transmission filter;

a reception filter; and

a phase shifter,

wherein

each of the transmission filter and reception filter has a ladder type structure where surface acoustic wave resonators are coupled in series and in parallel, and depending on which frequency end side of each pass band requires a steeper filter characteristic, a dielectric film is formed on at least one of the surface acoustic wave resonators coupled in series, or on at least one of the surface acoustic wave resonators coupled in parallel.

10. The SAW duplexer of claim 9, wherein

the SAW duplexer has a frequency allocation where a transmission band lies on a low frequency side and a reception band lies on a high frequency

side,

the transmission filter has a structure where the dielectric film is formed on a surface of at least one of the surface acoustic wave resonators coupled in series, and

the reception filter has a structure where the dielectric film is formed on a surface of at least one of the surface acoustic wave resonators coupled in parallel.

11. The SAW duplexer of claim 9, wherein

the SAW duplexer has a frequency allocation where a transmission band lies on a high frequency side and a reception band lies on a low frequency side,

the transmission filter has a structure where the dielectric film is formed on a surface of at least one of the surface acoustic wave resonators coupled in parallel, and

the reception filter has a structure where the dielectric film is formed on a surface of at least one of the surface acoustic wave resonators coupled in series.